

**British Standard Specification for
Rotating electrical machines
of particular types or
for particular applications**

**Part 16. Rotating electrical machines
with type of protection 'N'**

Spécifications pour machines électriques tournantes
de types particuliers ou à usage particulier
Partie 16. Machines électriques tournantes
avec type de protection 'N'

Elektrische umlaufende Maschinen bestimmter
Ausführung oder für bestimmte Verwendungszwecke
Teil 16. Elektrische umlaufende Maschinen
der Schutzart N

Foreword

This revision of BS 5000 : Part 16 has been prepared under the direction of the Power Electrical Engineering Standards Committee. It supersedes the 1981 edition of BS 5000 : Part 16, which is withdrawn, and now applies to rotating electrical machines up to and including 15 kV instead of just up to and including 11 kV.

This Part of BS 5000 sets out minimum requirements for rotating electrical machines with type of protection 'N', i.e. non-sparking rotating electrical machines with surface temperature limitations for use in hazardous areas designated zone 2 as defined in BS 5345 : Part 1.

At present there is no corresponding international standard. The International Electrotechnical Commission (IEC) is preparing a standard for apparatus with type of protection 'n' which may eventually be applicable to the type of equipment specified in this standard.

Certification. Attention is drawn to the Health and Safety at Work, etc. Act 1974, the Factories Act 1961, the Mines and Quarries Act 1954, the Regulations made under these Acts, and also any other appropriate statutory requirements or Byelaws. These place responsibility for complying with specific safety requirements on the manufacturer and the user. Further information relating to the requirements for certification of apparatus used in applications other than Group I (mining) or explosive processing and manufacture, is provided in BS 5345 : Part 1. BS 5345 : Part 7 is the appropriate standard for the installation and maintenance of type 'N' apparatus.

The recognized authorities in the UK* for the certification and approval of electrical equipment for use in hazardous areas are as follows.

For group I (coal mining) apparatus:

Health and Safety Executive
HSE(M)
Harpur Hill
Buxton, Derbyshire
SK17 9JN

For group II (non-mining) apparatus:

Health and Safety Executive
BASEEFA
Harpur Hill
Buxton, Derbyshire
SK17 9JN

NOTE 1. The Health and Safety Executive have stated that they have no plans to certify rotating electrical machines with type of protection 'N' for use in mines.

NOTE 2. Certification is not a requirement of this standard.

Compliance with a British Standard does not of itself confer immunity from legal obligations.

*There are other recognized authorities in other countries.

Amendment No. 1
published and effective from 29 July 1988
to BS 5000 : Part 16 : 1985

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Revised text

AMD 5633
July 1988

Clause 4. Enclosures

In paragraph 1, lines 2 and 3, delete 'BS 4999 : Part 20' and substitute 'BS 4999 : Part 105'.

AMD 5633
July 1988

Clause 5.1.1 Rotating electrical machines for operation at voltages up to and including 660 V

In line 4, delete 'BS 4999 : Part 20' and substitute 'BS 4999 : Part 105'.

AMD 5633
July 1988

Clause 5.1.2 Rotating electrical machines for operation at voltages above 660 V

In line 5, delete 'BS 4999 : Part 20' and substitute 'BS 4999 : Part 105'.

In line 6, delete 'BS 4999 : Part 71' and substitute 'BS 4999 : Part 145'.

AMD 5633
July 1988

Clause 5.3 Clearances and creepage distances

In lines 2 and 3, delete 'BS 4999 : Part 71' and substitute 'BS 4999 : Part 145'.

AMD 5633
July 1988

Clause 5.4 Cable sealing and dividing boxes

In paragraph 1, line 4, delete 'BS 4999 : Part 71' and substitute 'BS 4999 : Part 145'.

In paragraph 1, line 6, delete 'BS 4999 : Part 20' and substitute 'BS 4999 : Part 105'.

AMD 5633
July 1988

Clause 5.7 Auxiliary terminal arrangement

In note 2, line 2, delete 'BS 4999 : Part 20' and substitute 'BS 4999 : Part 105'.

AMD 5633
July 1988

Clause 9.1 Ventilation openings for external fans

In line 3, delete 'BS 4999 : Part 20' and substitute 'BS 4999 : Part 105'.

AMD 5633
July 1988

Clause 13. Marking

In item (a), line 1, delete 'BS 4999 : Part 4' and substitute 'BS 4999 : Part 101'.

In item (c), line 2, delete 'BS 4999 : Part 30' and substitute 'BS 4999 : Part 101'.

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July 1988

Appendix A. Information recommended to be given with enquiry and order

In lines 4 and 5, delete 'in appendix 31A of BS 4999 : Part 31 : 1972' and substitute 'in national appendix B of BS 4999 : Part 101 : 1987'.

AMD 5633
July 1988

Publications referred to

In the list of publications, delete the references to BS 4999 and substitute the following:

'BS 4999 General requirements for rotating electrical machines
 Part 101 Specification for rating and performance
 Part 105 Classification of degrees of protection provided by enclosures for rotating machinery
 Part 145 Specification for winding terminations'.

Amendment No. 2
published and effective from 28 February 1990
to BS 5000 : Part 16 : 1985

**Specification for rotating electrical machines of
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**Part 16. Rotating electrical machines with type
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Revised text

AMD 6243
February 1990

Clause 4. Enclosures (as amended by Amendment No. 1)

Delete the existing clause and substitute the following.

'4 Enclosures

4.1 Degree of protection

4.1.1 Enclosures containing bare live metal shall provide a degree of protection not less than IP 54 as classified in BS 4999 : Part 105. Other enclosures shall provide a degree of protection not less than IP 10.

NOTE. Attention is drawn to the fact that certain applications may necessitate more stringent requirements.

4.1.2 The design of joint faces and the details of gaskets, if any, shall recognize that the long term effectiveness of the enclosure is of particular importance.

NOTE. To comply with this requirement, it is essential that gasket materials have adequate life for the application and the environment and that they adhere to one of the mating surfaces only. If damaged at any time, gaskets should be replaced.

4.2 Mechanical strength

The mechanical strength of the enclosure shall comply with **22.4.3** of BS 5501 : Part 1 : 1977, with the exception that the tests on parts made of plastics material shall be carried out at $20 \pm 5^{\circ}\text{C}$.

NOTE. Attention is drawn to the fact that certain applications may necessitate more stringent requirements.

4.3 Circulating currents

Precautions shall be taken where necessary to guard against the occurrence of sparks due to the presence of circulating currents caused by stray magnetic fields.

NOTE. Precautions may include the provision of bonding between parts of the enclosure and the provision of an adequate number of bolts for bolted parts of enclosures.'